6.(Currently Amended) ~~A~~ The material as claimed in claim 5 wherein the configuration of organic layer relative to the inorganic layer is eclipsed.

7.(Currently Amended) ~~A~~ The material as claimed in claim 5 wherein the organic cation is a diammonium cation, the material is of composition $NH_3.A.NH_3.M_mO_{3m+1}$.

8.(Currently Amended) ~~A~~ The material as claimed in claim 7 wherein m=1, such that each inorganic oxide atomic plane alternates with an organic layer.

9.(Currently Amended) ~~A~~ The material as claimed in claim ~~8~~ 7 wherein m=2, the composition is $NH_3.A.NH_3.M_2O_7$ and wherein the ~~organic~~ inorganic oxide exists as a double atomic plane layer of corner shared MO_6 octahedra, such that the material has the stacking structure --A--O--MO_2--O--MO_2--O--A.

10.(Currently Amended) ~~A~~ The material as claimed in claim 8 wherein the organic cation is an aliphatic diammonium cation, and Z = $(CH)_n$, n=1, 2,..... .

11.(Currently Amended) ~~A~~ The material as claimed in claim 10 wherein, on the organic cation the ammonium cation groups are positioned on the terminal alkane units of A.

12.(Currently Amended) ~~A~~ The material as claimed in claim 11 having the chemical formula $NH_3(CH_2)_nNH_3MO_4$.

13.(Currently Amended) ~~A~~ The material as claimed in claim 12 with n=2.

14.(Currently Amended) ~~A~~ The material as claimed in claim 12 with n=6.

15.(Currently Amended) ~~A~~ The material as claimed in claim 12 with n=12.

16.(Currently Amended) ~~A~~ The material as claimed in claim ~~8~~ 4 wherein the organic cation is an aromatic diammonium cation.

17.(Currently Amended) ~~A~~ The material as claimed in claim 16 wherein A=C_6H_4 and the organic cation is $NH_3C_6H_4NH_3$.

18.(Currently Amended) ~~A~~ The material as claimed in claim 16 wherein the organic cation comprises an aromatic ring with two aliphatic side chains of equal or unequal length each side chain terminated by an ammonium ion, the organic cation having the general formula ~~$NH_3(CH_2)_nC_6H_4(CH_2)_mNH_3$~~ $NH_3(CH_2)_pC_6H_4(CH_2)_qNH_3$, where "p" and "q" are each independently selected from 0, 1, 2, or 3.

19.(Currently Amended) ~~A~~ The material as claimed in claim 17 in which there are two or more aromatic rings at least two of which are adjacent and wherein the adjacent aromatic rings are crosslinked to form an organic polymer layer.

20.(Currently Amended) ~~A~~ The material as claimed in claim 19 in which the organic polymer layer is conducting.

21.(Currently Amended) ~~A~~ The material as claimed in claim 2 having a general formula $X'_2.M_mO_{3m+1}$ wherein M is the metal, and X' is an organic cation and m=1, 2, 3.

22.(Currently Amended) ~~A~~ The material as claimed in claim 21 wherein the organic cation is monodentate.

23.(Currently Amended) ~~A~~ The material as claimed in claim 21 wherein the configuration of organic layer relative to the inorganic layer is staggered.

24.(Currently Amended) ~~A~~ The material as claimed in claim 23 wherein both organic cations are monoammonium cations and the material is of composition $(NH_3.A')_2.M._mO_{3m+1}$.

25.(Currently Amended) ~~A~~ The material as claimed in claim 24 wherein m=1, such that each inorganic oxide atomic layer alternates with an organic layer.

26.(Currently Amended) ~~A~~ The material as claimed in claim 24 wherein m=2, the composition is $(NH_3.A')_2.M_2O_7$ and wherein the organic oxide exists as a double atomic plane layer having approximately the ZWO_3 perovskite structure with the Z sites vacant such that the material has the stacking structure $NH_3.A'--MO_2--O--MO_2--A'.NH_3$.

27.(Currently Amended) ~~A~~ The material as claimed in claim 25 or 26 wherein one or both organic cation is an aliphatic ammonium cation, and $A'=(CH)_n$, n=1, 2, ...

28.(Currently Amended) ~~A~~ The material as claimed in claim 25 wherein one or both organic cation is an aromatic ammonium cation.

29.(Currently Amended) ~~A~~ The material as claimed in claim 28, wherein the aromatic ammonium cation has an aromatic ring and the aromatic ring has a side chain

which is aliphatic and terminated by an ammonium ion, having the formula $(C_6H_5.(CH_2)_mNH_3)_2MO_4$ where m=0, 1, 2, 3, . . . ,

30.(Currently Amended) ~~A~~ The material as claimed in claim 28 in which the aromatic ammonium cation has two or more aromatic rings, at least two of which are adjacent, and wherein the adjacent aromatic rings are crosslinked to form an organic polymer layer.

31.(Currently Amended) ~~A~~ The material as ~~claim in any one of the preceding claims~~ claimed in claim 30 in which the organic polymer layer is conducting.

32.(Currently Amended) ~~A~~ The material as claimed in claim 1 wherein dopants are introduced into the structure.

33.(Currently Amended) ~~A~~ The material as claimed in claim 32 wherein the dopant is selected from one or more of an alkali cation, a ~~methylammonium~~ methyl ammonium cation~~, replacing ammoinium groups,~~ (the cations replacing ammonium groups), field-effect injected electrons or field-effect ~~injection~~ injected electron holes.

34.(Currently Amended) ~~A~~ The material as claimed in claim 32 wherein the dopant is present in the inorganic oxide layers and the doping state of the oxide is adjusted such that the oxide exhibits superconductivity above the temperature of 40 K.

35.(Currently Amended) ~~A~~ The material as claimed in claim 32 where the doping state of the oxide is adjusted such that the oxide exhibits superconductivity above the temperature of 90 K.

36.(Currently Amended) ~~A~~ The material of claim 1 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

37.(Currently Amended) ~~A~~ The organic/inorganic oxide material of claim 1 in which the oxide layer comprising MO_4, M_2O_7 or M_mO_{3m+1} is wholly replaced by any of the following oxide layers CuO_2, NiO_2, CoO_2, CuO_2CaCuO_2, $Ca_{m-1}Cu_mO_{2m}$, m=1, 2, 3,..., NiO_2CaNiO_2, $Ca_{m-1}Ni_mO_{2m}$, m=1, 2, 3,..., square pyramidal MnO_3, square pyramidal RuO_3, octahedral RuO_4, O-Mn_2-Y-MnO_2-O, O-MnO_2-Ca-MnO_2-O, O-RuO_2-$YRuO_2$-O, or O-RuO_2-Ca-RuO_2-O.

38.(Currently Amended) ~~A~~ The layered organic-inorganic oxide material ~~comprising or including: One~~ as claimed in Claim 53 wherein the one or more layers of metal oxide ~~consisting of~~ comprise one or more atomic planes of metal oxide having substantially the ZMO_3 perovskite structure (M=metal) with the Z sites vacant; and ~~one or more layers of organic molecules,~~ wherein the metals form divalent cations and are coordinated into a corner-shared square-planar structure; or ~~wherein~~ the metals form tetravalent cations and are coordinated into a corner-shared square-pyramid structure; ~~wherein one or more metal-oxide layers alternate with one or more organic layers alternate to form a periodic planar structure~~.

39. (Currently Amended) ~~A~~ The material as claimed in claim 38 wherein the metal, M, is Cu, Ni, Ru, Mn, or a combination of these.

40.(Currently Amended) ~~A~~ The material as claimed in claim 39 wherein higher order structures are formed with two or more oxide layers each separated by an alkali

earth ion which is situated in the perovskite A-site.

41.(Currently Amended) ~~A~~ The material as claimed in claim 40 wherein the alkali earth ion is calcium.

42.(Currently Amended) ~~A~~ The material as claimed in claim 41 having the general formula of one of: $NH_3.A.NH_3CuO_2$, $(A.NH_3)_2CuO_2$, $NH_3.A.NH_3Ca_{m-1}Cu_mO_{2m}$, m=1, 2, 3, . . . , $(A.NH_3)_2Ca_{m-1}Cu_mO_{2m}$, m=1, 2, 3, . . . , $NH_3.A.NH_3NiO_2$, $(A.NH_3)_2NiO_2$, $NH_3.A.NH_3Ca_{m-1}Ni_mO_{2m}$, m=1, 2, 3, . . . , $(A.NH_3)_2Ca_{m-1}Ni_mO_{2m}$, m=1, 2, 3, . . . , and $NH_3.A.NH_3MnO_3$, $(A.NH_3)_2MnO_3$, $NH_3.A.NH_3Ca_{m-1}Mn_mO_{2m+2}$, m=1, 2, 3, . . . , $(A.NH_3)_2Ca_{m-1}Mn_mO_{2m+2}$, m=1, 2, 3, . . . , $NH_3.A.NH_3RuO_3$, $(A.NH_3)_2RuO_3$, $NH_3.A.NH_3Ca_{m-1}Ru_mO_{2m+2}$, m=1, 2, 3, . . . , $(A.NH_3)_2Ca_{m-1}Ru_mO_{2m+2}$, m=1, 2, 3, ...

43.(Currently Amended) ~~A~~ The material as claimed in any one of claims 38 to 42 wherein dopants are introduced into the structure.

44.(Currently Amended) ~~A~~ The material as claimed in claim 43 wherein the dopant is selected from one or more of an alkali cation, a ~~methylammonium~~ methyl ammonium cation~~, replacing ammoinium groups~~ (the cations replacing ammonium groups), field-effect injected electrons or field-effect ~~injection~~ injected electron holes.

45.(Currently Amended) ~~A~~ The material as claimed in claim 44 wherein the dopant is present in the inorganic oxide layers and the doping state of the oxide is adjusted such that the oxide exhibits superconductivity above the temperature of 40 K.

46.(Currently Amended) ~~A~~ The material as claimed in claim 44 where the doping

state of the oxide is adjusted such that the oxide exhibits superconductivity above the temperature of 90 K.

47.(Currently Amended) ~~A~~ The material as claimed in claim 38 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

48.(Currently Amended) A method of preparing ~~a~~ the layered inorganic-organic material as claimed in Claim 53 ~~which comprises or includes: one or more layers of metal oxide, and one or more organic layers,~~ wherein the layers exist substantially in a perovskite structure, the method comprising ~~or including~~ the ~~steps~~ step of contacting a source of metal and/or oxide with a source of the organic ~~layer~~ molecules such that ~~the~~ a layer structure substantially self assembles.

49.(Currently Amended) ~~A~~ The method as claimed in claim 48 wherein the material is of the general structure $NH_3.A.NH_3.M_mO_{3m+1}$ and is prepared either: by reaction of a diaminoalkane with tungstic acid (when the metal is W) or molybdic acid (when the metal is Mo), or by dissolution of tungstic acid (when the metal is W) or molybdic acid (when the metal is Mo) ammonia solution, or by reaction of W or Mo metal with hydrogen peroxide

50.(Currently Amended) A layered inorganic-organic material prepared substantially according to the ~~above~~ method of claim 49.

51. (Currently Amended) ~~A~~ The method of preparing a layered inorganic-organic material as claimed in Claim 48 ~~comprising or including~~ wherein the material

comprises one or more layers of metal oxide consisting of one or more atomic planes of metal oxide having substantially the ZMO_3 perovskite structure, or derivatives/analogues thereof (M=metal) with the Z sites vacant, and one or more layers of organic molecules, wherein one or more metal-oxide layers alternate with one or more organic layers alternate to form a periodic planar structure, and wherein the spacing and electronic coupling between adjacent but separation inorganic layers can be preselected by choice of appropriate organic molecule.

52.(Original) A layered inorganic-organic material prepared substantially according to the method of claim 51

53.(New) A layered organic/inorganic oxide material comprising one or more layers of a metal oxide and one or more layers of organic molecules, wherein the metal-oxide layers alternate with the one or more organic molecule layers to form a periodic planar structure.

54.(New) The material as claimed in claim 31 wherein dopants are introduced into the structure.

55.(New) The material as claimed in claim 31 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

56.(New) The material as claimed in claim 32 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

57.(New) The material as claimed in claim 33 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

58.(New) The material as claimed in claim 34 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

59.(New) The material as claimed in claim 35 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

60.(New) The organic/inorganic oxide material of claim 31 in which the oxide layer comprising MO_4, M_2O_7 or M_mO_{3m+1} is wholly replaced by any of the following oxide layers CuO_2, NiO_2, CoO_2, CuO_2CaCuO_2, $Ca_{m-1}Cu_mO_{2m}$, m=1, 2, 3,..., NiO_2CaNiO_2, $Ca_{m-1}Ni_mO_{2m}$, m=1, 2, 3,..., square pyramidal MnO_3, square pyramidal RuO_3, octahedral RuO_4, O-Mn_2-Y-MnO_2-O, O-MnO_2-Ca-MnO_2-O, O-RuO_2-YRuO_2-O, or O-RuO_2-Ca-RuO_2-O.

61.(New) The organic/inorganic oxide material of claim 32 in which the oxide layer comprising MO_4, M_2O_7 or M_mO_{3m+1} is wholly replaced by any of the following oxide layers CuO_2, NiO_2, CoO_2, CuO_2CaCuO_2, $Ca_{m-1}Cu_mO_{2m}$, m=1, 2, 3,..., NiO_2CaNiO_2, $Ca_{m-1}Ni_mO_{2m}$, m=1, 2, 3,..., square pyramidal MnO_3, square pyramidal RuO_3, octahedral RuO_4, O-Mn_2-Y-MnO_2-O, O-MnO_2-Ca-MnO_2-O, O-RuO_2-YRuO_2-O, or O-RuO_2-Ca-RuO_2-O.

62.(New) The material as claimed in claim 39 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

63.(New) The material as claimed in claim 40 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

64.(New) The material as claimed in claim 41 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

65.(New) The material as claimed in claim 42 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

66.(New) The material as claimed in claim 43 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

67.(New) The material as claimed in claim 44 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered states.

68.(New) The material as claimed in claim 45 in which M is partially or fully substituted by a magnetic transition metal ion so as to display magnetically ordered